

# **LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES**



**OFFICE OF FISHERIES**

**INLAND FISH SECTION**

**PART VI-A**

**WATERBODY MANAGEMENT PLAN SERIES**

**CROSS LAKE**

**LAKE HISTORY & MANAGEMENT ISSUES**

# **CHRONOLOGY**

DOCUMENT SCHEDULED TO BE UPDATED EVERY THREE YEARS

December 2013—Prepared By:  
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## **LAKE HISTORY**

### **GENERAL INFORMATION**

#### Parish/ location

Caddo Parish – within the City of Shreveport corporate limits.

#### Date Lake Formed

Cross Lake is a natural lake formed from the Great Log Raft which impeded the flow of the Red River and inundated low lying areas upstream. Cross Lake was one of a chain of lakes in the Red River Valley which was created during this time. When the Great Raft was cleared in 1873, the water level fell in all the raft lakes and several disappeared completely including Cross Lake.

#### Impoundment

Cross Lake was impounded in 1926 by constructing a concrete dam 3.6 miles upstream from the confluence of Cross Bayou and Red River on the right of way of the Kansas City Southern Railroad. The original spillway set the normal pool elevation of Cross Lake at 168.22 MSL. In 1962, three hinged crest gates were added to the concrete spillway structure. The normal pool stage of the reservoir was increased by nearly three feet to 171.2 MSL.

The lake occupies the valleys of Cross Bayou and Paw Paw Bayou.

#### Size (surface area)

8,576 acres

#### Watershed

The watershed of Cross Lake encompasses 253 sq. miles (161,920 acres). Eight major inlets contribute to Cross Lake. The ratio of watershed to lake surface is 18.9:1 acres.

#### Pool Stage

Surface elevation of Cross Lake is set at the crest gate elevation of 171.2 MSL.

#### Spillway Width

Cross Lake has a concrete spillway approximately 189 feet in length, including 3 steel crest gates that can be raised approximately 3 feet.

#### Drawdown description

Maximum drawdown capability is limited to 3 feet below normal pool stage by the design of the spillway.

#### Who Controls

Cross Lake is owned, operated and maintained by the City of Shreveport as a water supply reservoir for the city. Drawdowns are not a viable management strategy due to its use as a city water source.

Wes Wyche – Environmental Engineer- 318-673-6072

## LAKE AUTHORITY

### Association

Cross Lake is owned, operated and maintained by the City of Shreveport as a water supply reservoir for the city.

Act No. 31 of the 1910 Louisiana Legislature ([APPENDIX I](#)) transferred Cross Lake to the City of Shreveport as a water supply for the city and gave the city the authority to enact and enforce rules and regulations pertaining to Cross Lake.

Boat permits are required and may be obtained from the Cross Lake Patrol Office. The Cross Lake Patrol is responsible for enforcing city ordinances pertaining to Cross Lake. These regulations can be found at the link below:

[http://library.municode.com/print.aspx?h=&clientID=10151&HTMRequest=http%3a%2f%2flibrary.municode.com%2fHTML%2f10151%2flevel3%2fPTIICOOR\\_CH78STSIOTPUPL\\_ARTVIIIICRLA.html](http://library.municode.com/print.aspx?h=&clientID=10151&HTMRequest=http%3a%2f%2flibrary.municode.com%2fHTML%2f10151%2flevel3%2fPTIICOOR_CH78STSIOTPUPL_ARTVIIIICRLA.html)

Shreveport Police Department – Cross Lake Patrol  
2900 Municipal Pier Rd.  
Shreveport, LA 71119  
318-673-7245

## ACCESS

### Boat Ramps

There are two public boat launching facilities available for use at Cross Lake. Each ramp has boat mooring areas and a pier. Restrooms are located adjacent to each ramp. Each facility also offers bank fishing access. These facilities are operated and maintained by the City of Shreveport. In addition to the public boat ramps on Cross Lake, there are two private marinas which allow the general public to launch boats for a nominal fee. The names of the ramps, physical descriptions and geo-referenced locations are found in Table 1 below.

Table 1. Locations and descriptions of Cross Lake, LA, public boat ramps.

Ramp	Coordinates NAD83	Ramp	Parking
Fleming Park (Public)	32.536919° N -93.92125° W	Concrete	Blacktop – 50 Trailers
South Lakeshore Ramp (Public)	32.491703° N -93.850969° W	Concrete	Blacktop - 50 trailers
Johnson's Ramp (Pay to launch)	32.507028° N -93.919472° W	Concrete	Blacktop – 12 Trailers
Barron's Landing (Pay to launch)	32.50025° N -93.882833° W	Concrete	Blacktop- 15 Trailers

See [APPENDIX II](#) - “Cross Lake Public Boat Ramps” for mapped locations of ramps.

State / Federal Facilities:

There are no state or federal facilities on the lake. The City of Shreveport has two boat launch facilities on the lake; Fleming Park and South Lakeshore. Each of these locations has restrooms and picnic facilities and also offers bank fishing access. The city operates the Municipal Fishing Pier which is located adjacent to the Cross Lake Patrol Office. This facility has restrooms, picnic areas, and a newly constructed fishing pier with covered pavilions.

Artificial Reefs:

An artificial reef consisting of approximately 200 seven foot tall structures was placed in Cross Lake during 2003 and 2004. The structures consisted of plastic feed pallets placed on PVC pipe stems anchored in concrete (Figure 1). The structures stand upright in the water and provide a very large surface area for algal growth and many interstitial spaces of varying size to provide cover for forage fish and hiding places for predatory fish. These structures are environmentally friendly and long lasting.



Figure 1. Artificial fish attractors being deployed on Cross Lake, LA. The structures consist of a PVC pipe stem anchored in concrete with plastic feed pallets placed in the stem.

The 200 structures were placed under the southwest end of the I-220 Bridge near Willow Point. The structures were placed around the even numbered bridge pilings from 20 to 42 in the general location depicted by the map in Figure 2. The water depth averaged 12' in this area. This was a cooperative project between LDWF, Bass Life Associates, and the City of Shreveport. Signs were placed by the City of Shreveport on the bridge pilings marking the location of the reefs.

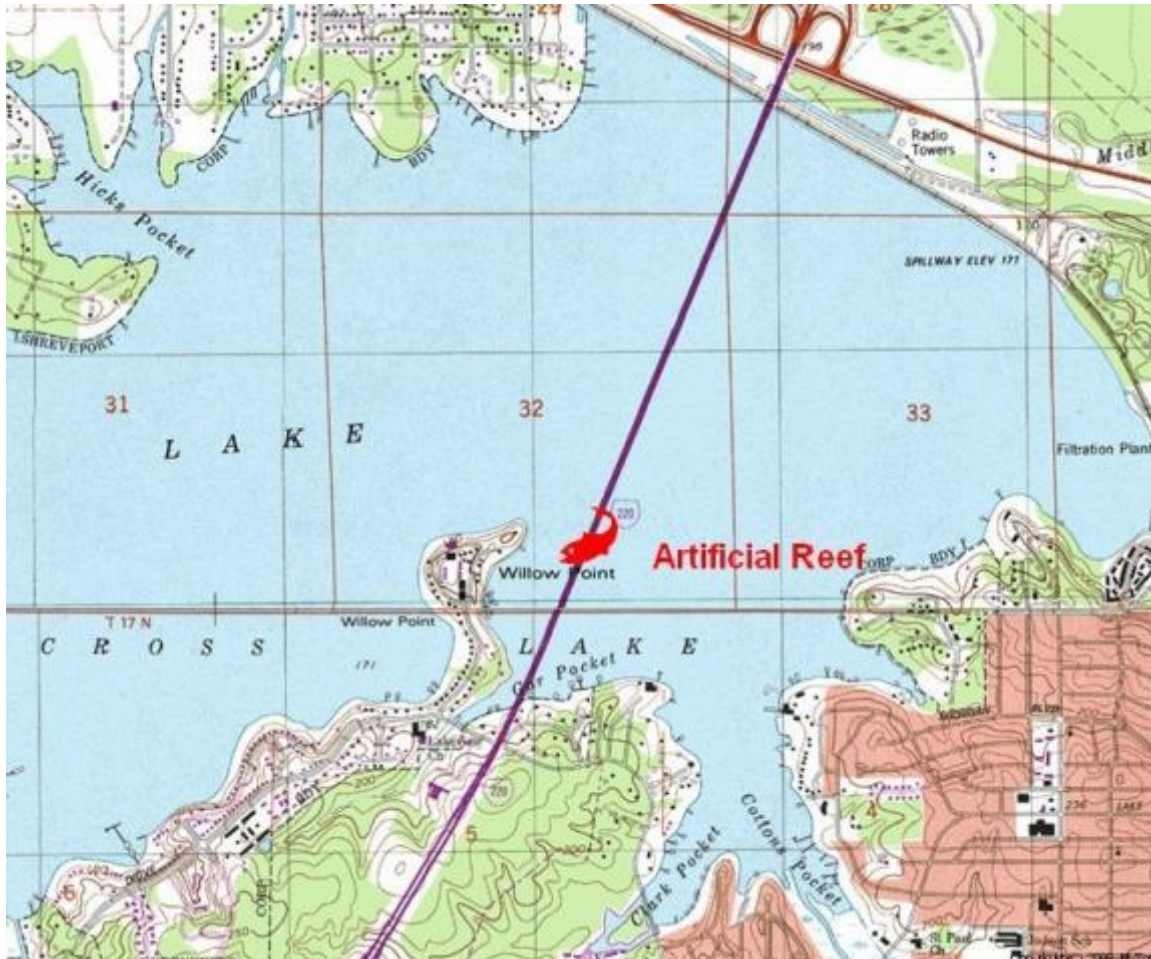


Figure 2. Map depicting the location of the artificial reef in Cross Lake, LA. Artificial fish attractors were placed in close proximity to the even numbered bridge pilings from 20 to 42 on the southwest end of the I-220 Bridge.

### Piers

The Shreveport Parks and Recreation Department (SPAR) recently opened the Municipal Pier (Figure 3) which is located adjacent to the Cross Lake Patrol Office. This pier is open to the public free of charge and replaced a dilapidated pier which once was a popular attraction for shoreline anglers.



Figure 3. The recently constructed Municipal Pier on Cross Lake, LA.

## **SHORELINE DEVELOPMENT**

The entire shoreline of Cross Lake is contained within the city limits of Shreveport. Most areas of the shoreline are developed with residential properties. Most commercial development is recreation / pleasure oriented, consisting of marinas, restaurants, and private clubs.

## **PHYSICAL DESCRIPTION OF LAKE**

### Shoreline Length

Approximately 70.4 miles

### Timber Type

Cross Lake is situated on gently rolling poorly drained soils in the valleys of Cross Bayou and Paw Paw Bayou. Prior to impoundment, portions of the lake were natural cypress swamps with adjacent bottomland hardwood forest. The cypress forest persisted in many areas of the lake following impoundment. The upper end of the lake and the upper end of most arms and pockets are heavily forested with cypress trees. Scattered cypress is found on most shorelines throughout the remainder of the lake.

### Average Depth

7.7 feet

Maximum Depth

18.3 feet

Total Water Storage Volume at Pool Stage

65,807 acre feet

Natural Seasonal Water Fluctuation

2-3 feet

## **EVENTS/ PROBLEMS**

Eutrophication

Cross Lake is typical of many impounded natural cypress swamps in that their rate of eutrophication has been accelerated by the altered hydrological regime. Aquatic vegetation and leaf litter from the dense forest canopy on the upper end of the lake contribute to a buildup of organic matter on the lake bed. This organic muck degrades fisheries habitat. In a natural cypress swamp, periods of low water in the late summer and early fall facilitate decomposition of organic matter through aerobic decomposition. Without the natural water fluctuation, leaf litter and dead aquatic vegetation are subject to the much slower anaerobic decomposition. The slow anaerobic decomposition process of leaf litter in Cross Lake is responsible for accretion of organic material and an associated decline in water quality and fish productivity in the forested areas of the lake.

Drawdown Capability

The maximum drawdown capability is limited to 3 feet below normal pool stage by the design of the control structure. In addition, drawdowns are not used as a management tool as the lake serves as the primary water supply for the City of Shreveport and storage capacity of the lake would be seriously impacted by a drawdown.

Assessment of Slot Limit

A 14 – 17 inch protective slot limit for black bass was established when the Louisiana Black Bass Management Plan (1990) was implemented in 1991. The Plan designated Cross Lake as one of seven “quality” lakes in the state. A “quality” lake is defined as meeting the criteria proven to be associated with increased numbers of largemouth bass greater than 25 inches and/or 10 lbs. The slot limit was initially fairly well received by most anglers with the exception of bass tournament fishermen.

A three year study of the largemouth bass population in Cross Lake was conducted from 2010 – 2012. One of the primary objectives of the study was to assess the protective slot limit. The Cross Lake largemouth bass population has a high maximum age, moderate growth rate, low mortality rate, with low recruitment variability. The prevalence of voluntary catch and release in the Cross Lake fishery is high. The fishery is currently managed with a 14 to 17 inch protected slot limit and an eight fish per day harvest limit with no more than four bass allowed over 17 inches. Given the dynamics of the Cross Lake largemouth bass population and fishery, the existing size regulation has minor influence on the fishery.

Without adequate harvest of largemouth bass below the slot limit, no benefits to the fishery should be expected. Furthermore, if anglers remain hesitant to harvest largemouth bass of legal size, the potential of any size regulation to manage the Cross Lake largemouth bass population is severely limited.

## MANAGEMENT ISSUES

### AQUATIC VEGETATION

Nuisance aquatic vegetation has been present in Cross Lake for many years, but proactive management by city officials has been instrumental in protecting the water supply for the City of Shreveport. In most cases, vegetation problems have been managed through herbicide applications by city employees or contractors to maintain recreational boating and fishing access.

In 1996, hydrilla (*Hydrilla verticillata*), was discovered in Cross Lake. This was of great concern as this plant has the potential to grow so prolifically that it can render large expanses of water unsuitable for recreation and can adversely impact taste and odor (water quality) in potable water reservoirs. A major infestation of hydrilla can impact potable water supplies by clogging intakes to water purification plants. By 1998, coverage of submerged aquatic vegetation, primarily hydrilla, had increased to the extent that assistance from LDWF was requested by city officials. A survey was conducted in April 1998 by an Aquatic Plant Research and Control Biologist with LDWF. The eastern two thirds of Cross Lake were found to be relatively free of submerged aquatic vegetation. The western third of the lake contained significant amounts of submerged aquatic vegetation comprised primarily of hydrilla, coontail (*Ceratophyllum demersum*), bladderwort (*Utricularia spp.*), and fanwort (*Cabomba caroliniana*). Several management options were provided to city officials by LDWF including chemical control, biological control utilizing triploid grass carp, and a combination of the two methods. Drawdowns, which are one of the most economical methods of aquatic vegetation control, were not suggested due to the lake serving as the water supply for the City of Shreveport.

Control efforts by city officials for hydrilla on Cross Lake have been ongoing since 1998 and include a combination of chemical controls, and biological control utilizing triploid grass carp. The initial stocking of triploid grass carp occurred in November 2007 when 5,492 fish were stocked. An additional 17,510 grass carp were stocked during 2013. All grass carp stocked were a minimum of 10" to 12" long to reduce predation. Thus far, efforts have kept hydrilla at manageable levels where the water supply is not imminently threatened and recreational activities have not been seriously impacted.

Giant salvinia (*Salvinia molesta*) was first documented in Cross Lake in 2006. Despite ongoing foliar herbicide applications by personnel from the City of Shreveport and

contractors working under their supervision, giant salvinia continues to be a problem on Cross Lake. City officials have requested assistance from LDWF on several occasions; in 2009, LDWF spray crews treated 350 acres of vegetation consisting primarily of giant salvinia. During 2013, LDWF contract sprayers treated 1,052 acres of giant salvinia. A survey conducted in October 2009 by LDWF indicated that 1,402 acres were covered by giant salvinia. A subsequent survey in June 2013 showed 1,842 acres of giant salvinia coverage on the lake. The west end of the lake which is heavily forested with cypress trees, along with the upper ends of the arms and pockets, and the manmade canals are the primary areas where giant salvinia is a problem on Cross Lake.

## DRAWDOWN HISTORY

Drawdowns are not used as a management strategy for Cross Lake as the lake serves as the water supply for the City of Shreveport.

### Aquatic Vegetation Surveys and Type Maps

Vegetation type map surveys are not routinely conducted on Cross Lake as the City of Shreveport has historically handled aquatic vegetation management. Maps indicating giant salvinia (*Salvinia molesta*) coverage were produced as part of our response to requests from the City of Shreveport. They can be found in [APPENDIX III](#).

### Aquatic Vegetation Treatment History

Aquatic vegetation control is normally handled by the Environmental Services Department of the City of Shreveport or contractors operating under their direction. Treatments are made for submerged vegetation as well as foliar applications for floating and emergent vegetation. Complete records are not available prior to September 2010. Herbicide applications made by crews working for the City of Shreveport from September 2010 through November 2013 along with hydrilla treatments conducted in 2007 are listed in Table 2.

Table 2. Herbicide applications by the City of Shreveport in Cross Lake, LA.

Treatment Year	Primary Plant Species	Herbicides Used	Area Treated
2007	hydrilla	Aquathol K (3.125 ppm)	750 acre feet
2010 (Sept-Dec.)	hydrilla	Aquathol K (3.125 ppm)	250 acre feet
	giant salvinia, duckweed, American lotus, giant cutgrass	glyphosate (0.75 – 1 gal / acre), diquat (0.75 – 1 gal / acre)	111 acres
2011	hydrilla	Aquathol K (3.125 ppm)	680 acre feet
	naiad	Nautique (3 gal / acre)	50 acres
	giant salvinia	glyphosate (0.75 – 1 gal / acre), diquat (1 gal / acre)	57 acres
	duckweed	diquat (1 gal / acre)	7.5 acres
	American lotus, water hyacinth, lily pads	2,4 – D (1 gal / acre)	61 acres

	alligator weed	glyphosate (0.75 gal / acre)	7.5 acres
2012	hydrilla	Aquathol K (3.125 ppm)	110.2 acre feet
	naiad	Nautique (3 gal / acre) with diquat (1 pint / acre)	28.3 acres
	giant salvinia	glyphosate (0.75 – 1 gal / acre), diquat (1 gal / acre)	1310 acres
	American lotus, water hyacinth, lily pads, alligator weed	2,4 – D (1 gal / acre)	179 acres
	giant cutgrass	Habitat (0.5 gal / acre)	66 acres
2013 (Jan. – Nov.)	hydrilla	Aquathol K (3.125 ppm)	166.3 acre feet
	naiad	Nautique (3 gal / acre) with diquat (1 pint / acre)	26.4 acres
	giant salvinia	glyphosate (0.75 – 1 gal / acre), diquat (1 gal / acre)	1766.5 acres
	American lotus	2,4 – D (1 gal / acre)	129 acres
	giant cutgrass	glyphosate (1 gal / acre) with Habitat (3 pints / acre)	10 acres

LDWF spray crews or contractors have made limited herbicide applications on Cross Lake at the request and in close coordination with city officials. Foliar herbicide applications by LDWF spray crews or contractors for floating and emergent aquatic vegetation are listed in Table 3.

Table 3. Herbicide applications by LDWF Spray Crews and Contractors in Cross Lake, LA, 2009 – 2013.

Treatment Year	Primary Plant Species	Herbicides Used	Acres Treated
2009	giant salvinia, water hyacinth, water lettuce, duckweed	Aqua Master – 136 gals. (0.75 gal/acre) Diquat E Pro 2L – 6 gals. (1 gal/acre) Knockout – 169 gals. (1 gal/acre)	350
2013	giant salvinia	Aqua Master – 783 gals. Tribune 262 gals. (mixture of Aqua Master (0.75 gal/acre) and Tribune (0.25 gal/acre) with Aqua King Plus (0.25 gal/acre) and Thoroughbred (8 oz. /acre) surfactants)	1052

## **HISTORY OF REGULATIONS**

### Recreational

A 14" – 17" protected slot limit with an 8 fish creel and 4 fish over 17" was implemented on April 1, 1991.

Statewide regulations have been in effect for all other game fish species since impoundment.

The recreational fishing regulations for 2013 may be viewed at the link below:

<http://www.wlf.louisiana.gov/fishing/freshwater-creel-and-size-limits>

### Commercial

The use of gill nets, trammels nets, hoop nets and fish seines was prohibited in Cross Lake in September 1986 by the Louisiana Wildlife and Fisheries Commission.

In addition to the prohibition of the above gear types by the Louisiana Wildlife and Fisheries Commission, The City of Shreveport has ordinances regulating commercial fishing activities on the lake. Section 78-403 of the Code of Ordinances prohibits the taking of fish, turtles or other wildlife from Cross Lake or C. Bickham Dickson Lake by the use of nets of any kind, traps, wire baskets, yo-yos, set lines, or trotlines. Section 78-404 allows commercial fishing on Cross Lake pursuant to a contract with the City of Shreveport, and allows such contract to provide for exemptions to Section 78-403.

The City of Shreveport recently passed a resolution on September 24, 2013 authorizing the Mayor to enter into an agreement with two interested parties to conduct turtle trapping operations on Cross Lake.

The Code of Ordinances for the City of Shreveport may be viewed at the link below. Ordinances concerning Cross Lake are found in Chapter 78; Article VIII:

<http://library.municode.com/index.aspx?clientId=10151>

The 2014 statewide commercial fishing regulations may be viewed at the link below:

<http://www.wlf.louisiana.gov/fishing/regulations>

## **FISH KILLS/ DISEASE HISTORY, LMBV**

No major fish kills on Cross Lake have been reported to LDWF in recent years.

LMBV - Largemouth Bass Virus is a naturally occurring waterborne virus that effects fish, but is not known to infect warm-blooded animals. The virus has been found in other members of the sunfish family, but has only proved fatal to largemouth bass. The virus affects the swim bladder in largemouth bass. Largemouth bass which are exhibiting symptoms of the disease lose their ability to control their buoyancy and experience trouble swimming and appear bloated. The fish will eventually float to the surface where they can be affected by other environmental stressors. Most bass infected with largemouth bass virus

appear normal. Adult bass weighing two pounds or more appear to be most susceptible to the disease. Researchers are uncertain as to what triggers an epizootic outbreak, but as most fish kills occur during the warmer months, high water temperatures and poor water quality may contribute to development of the disease. It is uncertain as to whether Largemouth Bass Virus will have any long term impacts to any body of water where it is known to occur. It appears that the incidence of disease and infection rate diminishes with time after the initial infection of fish in a given waterbody. Sampling for Largemouth Bass Virus was conducted in 2002 on 60 largemouth bass collected from Cross Lake. Seven individuals (11.7%) tested positive for LMBV. In conjunction with this study, 20 bluegills and 12 redear were also tested for LMBV. No individuals of either species tested positive.

## CONTAMINANTS/POLLUTION

The Louisiana Department of Environmental Quality (DEQ) along with the City of Shreveport's Water and Sewerage Department and Department of Environmental Services monitors Cross Lake for contaminants and pollution that may be detrimental to the drinking water supply for the city. For more information including the latest water quality report visit the City of Shreveport Water and Sewerage Department website:

<http://www.shreveportla.gov/index.aspx?NID=520>

The DEQ and the Louisiana Department of Health and Hospitals (DHH) monitor the fisheries resources of Cross Lake for human health risks. No Fish Consumption Advisory has been issued for Cross Lake.

## BIOLOGICAL

### Fish Sampling History:

The Louisiana Department of Wildlife and Fisheries has conducted fisheries sampling on Cross Lake for a number of years. The fish sampling history from 1967 to 2013 along with proposed future sampling can be found in Table 4.

Table 4. Historical, and proposed fish sampling on Cross Lake, LA, from 1967 to 2016.

YEAR	GEAR
1967	3 – One Acre Rotenone Sets
1978	3 - 450' Experimental Gill Net Sets – 3 panels consisting of 150' each of 0.75", 1.5", and 2.5" Bar Mesh Monofilament
1979	3 – One Acre Rotenone Sets
1980	3 – One Acre Rotenone Sets
1981	4 – One Acre Rotenone Sets
1982	4 – One Acre Rotenone Sets 24 - 300' Gill Net Sets – 3" Bar 24 - 300' Gill Net Sets – 3.5" Bar 24 - 300' Gill Net Sets – 4" Bar
1983	4 – One Acre Rotenone Sets 24 - 300' Gill Net Sets – 3" Bar

	24 - 300' Gill Net Sets – 3.5" Bar 24 - 300' Gill Net Sets – 4" Bar
1984	3 – One Acre Rotenone Sets Wire Trap Study – 12 Net Days
1985	3 – One Acre Rotenone Sets
1986	3 – One Acre Rotenone Sets
1988	Electrofishing – 8 hours of sampling - Spring
1989	4 – One Acre Rotenone Sets Electrofishing - 184 minutes of sampling – Spring Electrofishing - 120 minutes of sampling – Fall
1990	Electrofishing – 96 minutes of sampling – Fall / Includes Forage Sample Electrofishing – 100 minutes of sampling – Spring Seine – One ¼ quadrant haul 2 – 100' Gill Net Sets – 2.5" Bar, Mono 2 – 100' Gill Net Sets – 3" Bar, Mono 2 – 100' Gill Net Sets – 3.5" Bar, Mono 2 – 100' Gill Net Sets – 4" Bar, Mono
1991	Electrofishing - 94 minutes of sampling – Spring Electrofishing - 169 minutes of sampling – Fall / Includes Forage Sample 2 – 100' Gill Net Sets – 2.5" Bar, Mono 2 – 100' Gill Net Sets – 3" Bar, Mono 2 – 100' Gill Net Sets – 3.5" Bar, Mono 2 – 100' Gill Net Sets – 4" Bar, Mono
1992	Electrofishing - 103 minutes of sampling – Spring Electrofishing - 106 minutes of sampling – Fall / Includes Forage Sample
1993	Electrofishing - 91 minutes of sampling – Spring Electrofishing - 90 minutes of sampling – Fall / Includes Forage Sample
1994	Electrofishing - 119 minutes of sampling – Spring Electrofishing - 90 minutes of sampling – Fall / Includes Forage Sample
1995	Electrofishing - 79 minutes of sampling – Spring Electrofishing - 109 minutes of sampling – Fall
1996	Electrofishing - 116 minutes of sampling – Spring Electrofishing - 94 minutes of sampling – Fall / Includes Forage Sample
1997	Electrofishing 6 – 15 minute samples – Spring Electrofishing 7 – 15 minute samples – Fall / Includes 1 Forage Sample
1998	Electrofishing 6 – 15 minute samples – Spring Electrofishing 7 – 15 minute samples – Fall / Includes 1 Forage Sample
1999	Electrofishing 6 – 15 minute samples – Spring Electrofishing 7 – 15 minute samples – Fall / Includes 1 Forage Sample
2000	Electrofishing 6 – 15 minute samples – Spring Electrofishing 7 – 15 minute samples – Fall / Includes 1 Forage Sample
2001	Electrofishing 6 – 15 minute samples – Spring Electrofishing 7 – 15 minute samples – Fall / Includes 1 Forage Sample Shoreline Seining - 6 samples (1 quadrant hauls)
2002	Electrofishing 6 – 15 minute samples – Spring Electrofishing 7 – 15 minute samples – Fall / Includes 1 Forage Sample

2004	<p>Electrofishing 6 – 15 minute samples – Spring</p> <p>Electrofishing 7 – 15 minute samples – Fall / Includes 1 Forage Sample</p> <p>Gill Nets:</p> <p>6 – 300' Gill Net Sets – 2.5" Bar, Mono</p> <p>6 – 300' Gill Net Sets – 3" Bar, Mono</p> <p>6 – 300' Gill Net Sets – 3.5" Bar, Mono</p> <p>6 – 300' Gill Net Sets – 4" Bar, Mono</p>
2006	<p>Electrofishing 6 – 15 minute samples – Spring</p> <p>Electrofishing 7 – 15 minute samples – Fall / Includes 1 Forage Sample</p>
2009	<p>Electrofishing 7 – 15 minute samples – Spring</p> <p>Electrofishing 7 – 15 minute samples – Fall / Includes 1 Forage Sample</p> <p>Gill Nets:</p> <p>12 – 300' Gill Net Sets – 2.5" Bar, Mono</p> <p>12 – 300' Gill Net Sets – 3" Bar, Mono</p> <p>12 – 300' Gill Net Sets – 3.5" Bar, Mono</p> <p>12 – 300' Gill Net Sets – 4" Bar, Mono</p>
2010	<p>Electrofishing 16 – 15 minute samples – Spring</p> <p>Electrofishing 7 – 15 minute samples – Fall / Includes 1 Forage Sample</p> <p>Gill Nets:</p> <p>6 – 300' Gill Net Sets – 2.5" Bar, Mono</p> <p>6 – 300' Gill Net Sets – 3" Bar, Mono</p> <p>6 – 300' Gill Net Sets – 3.5" Bar, Mono</p> <p>6 – 300' Gill Net Sets – 4" Bar, Mono</p> <p>6 – 1" Bar, 3.5' dia. Lead Net Sets</p>
2011	<p>Electrofishing 17 – 15 minute samples – Spring</p> <p>Electrofishing 7 – 15 minute samples – Fall / Includes 1 Forage Sample</p> <p>Gill Nets:</p> <p>6 – 300' Gill Net Sets – 2.5" Bar, Mono</p> <p>6 – 300' Gill Net Sets – 3" Bar, Mono</p> <p>6 – 300' Gill Net Sets – 3.5" Bar, Mono</p> <p>6 – 300' Gill Net Sets – 4" Bar, Mono</p> <p>Floating Gill Nets:</p> <p>4 – 300' Floating Gill Net Sets - 3" Bar, Mono</p> <p>6 – 300' Floating Gill Net Sets – 3.5" Bar, Mono</p> <p>2 – 300' Floating Gill Net Sets – 4" Bar, Mono</p> <p>6 – 1" Bar, 3.5' dia. Lead Net Sets</p>
2012	<p>Electrofishing 30 – 15 minute samples – Spring</p> <p>Electrofishing 6 – 15 minute samples – Fall</p> <p>4 – 225 second Forage Samples – Fall</p> <p>Floating Gill Nets:</p> <p>2 – 300' Floating Gill Net Sets 3" Bar, Mono</p> <p>4 – 300' Floating Gill Net Sets – 3.5" Bar, Mono</p> <p>2 – 300' Floating Gill Net Sets – 4" Bar, Mono</p> <p>7 – 1" Bar, 3.5' dia. Lead Net Sets</p>
2013	<p>Gill Nets:</p> <p>6 – 300' Gill Net Sets – 2.5" Bar, Mono</p> <p>6 – 300' Gill Net Sets – 3" Bar, Mono</p>

	6 – 300’ Gill Net Sets – 3.5” Bar, Mono 6 – 300’ Gill Net Sets – 4” Bar, Mono
2014	No sampling planned
2015	Electrofishing 6 – 15 minute samples – Spring Electrofishing 6 – 15 minute samples – Fall 4 – 225 second Forage Samples – Fall
2016	No sampling planned

### Lake Records

The Louisiana Outdoor Writers Association (LOWA) is the official curator of fish records for the State of Louisiana. No lists are kept specifically for Cross Lake. Complete information regarding Louisiana fish records is included in the attached site:

<http://www.laoutdoorwriters.com/Records/LouisianaFishRecords/tabid/87/Default.aspx>

### Stocking History

The City of Shreveport has operated a fish hatchery on the shoreline of Cross Lake since the early 1940’s. The Cross Lake Fish Hatchery was constructed during the late 1930’s and early 1940’s under the Civilian Conservation Corp (CCC) program. In the early years, largemouth bass, catfish, crappie and bream were raised for stocking into Cross Lake. No records of fish stockings exist from the Cross Lake Hatchery prior to 1978. In 1991, the City of Shreveport entered into a 10 year agreement with the Louisiana Florida Bass Alliance (LFBA). Their goal was to improve the Cross Lake Hatchery and stock fish produced there to other public waterbodies in the area in addition to Cross Lake. In 2000, a new cooperative agreement was formed between the City of Shreveport, Bass Life Associates, and LDWF to operate the Cross Lake Hatchery. Under this new arrangement, LDWF provides fry and assistance with hauling fish to stocking locations. The stocking history of Cross Lake from 1978 to 2013 can be found in Table 5.

Table 5. The fish stocking history for Cross Lake, LA.

<b>Date</b>	<b>Number / Species stocked</b>
1978	41,600 northern largemouth bass fingerlings 10,000 channel catfish fingerlings 101,200 hybrid striped bass fingerlings 30,000 crappie fingerlings
1979	105,500 northern largemouth bass fingerlings 136,700 hybrid striped bass fingerlings
1980	55,000 northern largemouth bass fingerlings 95,750 hybrid striped bass fingerlings
1981	25,000 northern largemouth bass fingerlings 46,000 hybrid striped bass fingerlings
1982	100,000 Florida largemouth bass fingerlings 25,000 northern largemouth bass fingerlings
1983	50,000 Florida largemouth bass fingerlings 30,000 northern largemouth bass fingerlings

	73,592 hybrid striped bass fingerlings
1984	135,000 northern largemouth bass fingerlings 102,000 hybrid striped bass fingerlings
1985	82,000 northern largemouth bass fingerlings 10,000 Florida largemouth bass fingerlings 98,225 hybrid striped bass fingerlings
1986	88,000 northern largemouth bass fingerlings 26,000 Florida largemouth bass fingerlings 200 channel catfish fingerlings 142,044 hybrid striped bass fingerlings
1987	34,000 northern largemouth bass fingerlings 11,000 Florida largemouth bass fingerlings 2,000 channel catfish fingerlings
1988	19,000 northern largemouth bass fingerlings 17,000 Florida largemouth bass fingerlings 5,000 channel catfish fingerlings
1989	24,000 northern largemouth bass fingerlings 3,000 Florida largemouth bass fingerlings 41,000 channel catfish fingerlings
1990	22,000 Florida largemouth bass fingerlings 23,000 channel catfish fingerlings
1991	37,200 Florida largemouth bass fingerlings 20,000 channel catfish fingerlings
1992	44,522 Florida largemouth bass fingerlings 44,310 channel catfish fingerlings
1993	34,500 Florida largemouth bass fingerlings
1994	72,000 Florida largemouth bass fingerlings 72,980 channel catfish fingerlings 1,000 hybrid striped bass fingerlings 50,000 hybrid striped bass fry
1995	108,000 Florida largemouth bass fingerlings 15,000 channel catfish fingerlings 50,000 hybrid striped bass fingerlings
1996	156,000 Florida largemouth bass fingerlings 24,560 channel catfish fingerlings 57,000 hybrid striped bass fingerlings
1997	132,260 Florida largemouth bass fingerlings
1998	118,880 Florida largemouth bass fingerlings
1999	70,118 Florida largemouth bass fingerlings 39,000 channel catfish fingerlings 1,500 hybrid striped bass fingerlings
2000	133,186 Florida largemouth bass fingerlings 39,633 channel catfish fingerlings 128,733 hybrid striped bass fingerlings
2001	49,060 Florida largemouth bass fingerlings 33,110 channel catfish fingerlings

	23,495 hybrid striped bass fingerlings
2002	22,465 Florida largemouth bass fingerlings 30,263 blue catfish fingerlings 52,345 channel catfish fingerlings 7,088 hybrid striped bass fingerlings
2003	150,470 Florida largemouth bass fingerlings 30,858 channel catfish fingerlings 3,250 hybrid striped bass sub-adults
2004	68,003 Florida largemouth bass fingerlings 20,000 channel catfish fingerlings 51,400 hybrid striped bass fingerlings (reciprocal cross)
2005	79,183 Florida largemouth bass fingerlings 10,000 channel catfish fingerlings
2006	76,385 Florida largemouth bass fingerlings 4,009 channel catfish fingerlings
2007	130,490 Florida largemouth bass fingerlings 44,454 channel catfish fingerlings 50,260 hybrid striped bass fingerlings 5,492 triploid grass carp (10" – 12")
2008	87,085 Florida largemouth bass fingerlings 10,000 channel catfish fingerlings
2009	127,935 Florida largemouth bass fingerlings 56,835 hybrid striped bass fingerlings
2010	89,085 Florida largemouth bass fingerlings 27,333 channel catfish fingerlings 90,795 hybrid striped bass fingerlings (reciprocal cross)
2011	202,397 Florida largemouth bass fingerlings 45,026 channel catfish fingerlings
2012	204,494 Florida largemouth bass fingerlings 17,898 channel catfish fingerlings
2013	28,227 Florida largemouth bass fingerlings 50,056 hybrid striped bass fingerlings 17,510 triploid grass carp (10" – 12")

#### Largemouth Bass Genetics

Genetic analysis of the largemouth bass population in Cross Lake was conducted every three years from 1992 – 2004. Testing was conducted annually from 2010 – 2012 in conjunction with the largemouth bass study on Cross Lake. The results are listed in Table 7, the overall Florida genome increased from 3% to 27% during the study period; however, the percentage of pure Florida largemouth bass remained very low ranging from 0% to 4%.

Table 7. – Largemouth bass genetic analysis from Cross Lake, LA.

Year	Number	Northern %	Florida %	Hybrid %
1992	33	97%	3%	0%
1995	44	93%	0%	7%
1998	60	81%	2%	17%
2001	50	76%	4%	20%
2004	70	86%	1%	13%
2010	145	82%	3%	15%
2011	281	79%	4%	17%
2012	307	73%	3%	24%

Species Profile:

Table 6. List of indigenous freshwater fishes found in Cross Lake, LA through LDWF standardized sampling efforts.

Gar Family, LEPISOSTEIDAE

Spotted gar, *Lepisosteus oculatus* (Winchell)

Longnose gar, *Lepisosteus osseus* (Linnaeus)

Bowfin Family, AMIIDAE

Bowfin, *Amia calva* Linnaeus

Herring Family, CLUPEIDAE

Skipjack herring, *Alosa chrysochloris* (Rafinesque)

Gizzard shad, *Dorosoma cepedianum* (Lesueur)

Threadfin shad, *Dorosoma petenense* (Günther)

Minnow Family, CYPRINIDAE

Blacktail shiner, *Cyprinella venusta* (Girard)

Common Carp, *Cyprinus carpio* Linnaeus

Golden shiner, *Notemigonus crysoleucas* (Mitchill)

Emerald shiner, *Notropis atherinoides* Rafinesque

Blackspot shiner, *Notropis atrocaudalis* Evermann

Bullhead minnow, *Pimephales vigilax* (Baird and Girard)

Sucker Family, CATOSTOMIDAE

Lake chubsucker, *Erimyzon sucetta* (Lacépède)

Smallmouth buffalo, *Ictiobus bubalus* (Rafinesque)

Freshwater Catfish Family, ICTALURIDAE

Black bullhead, *Ameiurus melas* (Rafinesque)

Yellow bullhead, *Ameiurus natalis* (Lesueur)

Brown bullhead, *Ameiurus nebulosus* (Lesueur)

Blue catfish, *Ictalurus furcatus* (Lesueur)  
Channel catfish, *Ictalurus punctatus* (Rafinesque)  
Flathead catfish, *Pylodictis olivaris* (Rafinesque)

Pike Family, ESOCIDAE

Grass pickerel, *Esox americanus vermiculatus* Lesueur  
Chain pickerel, *Esox niger* Lesueur

Pirate Perch Family, APHREDODERIDAE

Pirate perch, *Aphredoderus sayanus* (Gilliams)

Killifish Family, CYPRINODONTIDAE

Blackstripe topminnow, *Fundulus notatus* (Rafinesque)

Livebearer Family, POECILIIDAE

Western mosquitofish, *Gambusia affinis* (Baird and Girard)

Silverside Family, ATHERINIDAE

Brook silverside, *Labidesthes sicculus* (Cope)

Temperate Bass Family, PERCICHTHYIDAE

White bass, *Morone chrysops* (Rafinesque)  
Yellow bass, *Morone mississippiensis* Jordan and Eigenmann  
Palmetto bass, *Morone saxatilis* & X *Morone chrysops*

Sunfish Family, CENTRARCHIDAE

Green sunfish, *Lepomis cyanellus* Rafinesque  
Warmouth, *Lepomis gulosus* (Cuvier)  
Orangespotted sunfish, *Lepomis humilis* (Girard)  
Bluegill, *Lepomis macrochirus* (Rafinesque)  
Dollar sunfish, *Lepomis marginatus* (Holbrook)  
Longear sunfish, *Lepomis megalotis* (Rafinesque)  
Redear sunfish, *Lepomis microlophus* (Günther)  
Redspotted sunfish, *Lepomis miniatus* Jordan  
Bantam sunfish, *Lepomis symmetricus* Forbes  
Spotted bass, *Micropterus punctulatus* (Rafinesque)  
Northern largemouth bass, *Micropterus salmoides salmoides* (Lacépède)

White crappie, *Pomoxis annularis* Rafinesque  
Black crappie, *Pomoxis nigromaculatus* (Lesueur)

Perch Family, PERCIDAE

Logperch, *Percina caprodes* (Rafinesque)

Drum Family, SCIAENIDAE

Freshwater drum, *Aplodinotus grunniens* Rafinesque

Species introduced through stocking efforts:

Grass carp (certified triploid), *Ctenopharyngodon idella* (Valenciennes)

Florida largemouth bass, *Micropterus floridanus* Kassler et al.

#### Threatened/Endangered/Exotic Species

No threatened or endangered fish species are known to inhabit Cross Lake.

### **CREEL**

An access point creel survey with an on the water boat count was conducted at Cross Lake from January through December of 2010. Creel surveys were scheduled to be conducted on 4 weekend days and 2 weekdays per month during periods of heavy fishing pressure (Feb. – Oct.) and during periods when fishing pressure was lower (Nov. – Jan.) surveys were conducted 2 weekend days and 1 weekday per month. Creel survey days were randomly selected for the project. Budget and travel constraints affected the creel surveys during March and April 2010, with 1 day being missed during March and 2 days during April.

A total of 806 anglers were interviewed during 471 actual interviews on the 60 days the creel survey was conducted in 2010. The average fishing trip was 3.48 hours long; anglers were mostly local as the average drive to the lake was 13 miles. Nearly half (47%) of the anglers utilizing Cross Lake describe themselves as bass anglers. The bass anglers which were interviewed by LDWF biologists during the creel survey only harvested 26 largemouth bass. It was determined that 92% of legal size bass caught from Cross Lake was released by bass anglers.

### **HYDROLOGICAL CHANGES**

Three hinged crest gates were added to the concrete spillway structure in 1962. This modification raised the normal pool level of Cross Lake nearly 3 feet from 168.22 MSL to the current pool level of 171.2 MSL. This increased the surface area of the lake to 8,576 acres. With the addition of the hinged crest gates, a limited drawdown capability of three feet was provided.

## **WATER USE**

The primary purpose of Cross Lake is a potable water supply for the City of Shreveport. The lake is also popular for recreation including fishing, boating, waterskiing, and waterfowl hunting.

## **HUNTING**

Waterfowl hunting is locally popular on Cross Lake. Blinds must be registered with the Cross Lake Patrol and the City of Shreveport has additional regulations governing hunting on Cross Lake that can be found at the link below:

[http://library.municode.com/HTML/10151/level4/PTIICOOR\\_CH78STSIOTPUPL\\_ARTVII\\_ICRLA\\_DIV4HU.html](http://library.municode.com/HTML/10151/level4/PTIICOOR_CH78STSIOTPUPL_ARTVII_ICRLA_DIV4HU.html)

## APPENDIX I

[\(return to authorization\)](#)

### Transfer of Cross Lake to City of Shreveport - Enabling Legislation

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ACT NO. 31.

Senate Bill No. 6.

#### AN ACT

Authorizing the Register of Land Office to sell and convey to the City of Shreveport, the bed of what is known as Cross Lake in the Parish of Caddo, and fixing the terms and conditions of such sale, reserving to the State of Louisiana all minerals and mineral rights on and under said lands.

Cross Lake transferred to City of Shreveport for waterworks purposes.

Section 1. Be it enacted by the General Assembly of the State of Louisiana; that in pursuance to due and legal notice published in the Parish of Caddo of the intention to apply for the passage of this law, due proof having been made thereof to this body; That the Register of the State Land Office be and he is hereby authorized and empowered as hereinafter provided to sell and convey to the City of Shreveport, a municipal corpora-

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tion in the Parish of Caddo, all that portion of land belonging to the State of Louisiana in what is known as the bed of Cross Lake, particularly that portion of the bed of said lake embraced within the traverse lines thereof in Section 25, Township 18 north, Range 16 west; Sections 20, 21, 28, 29, 30, 31, 32 and 33 in Township 18 north, Range 15 west and Sections 5 and 6, 1 and 12 in Township 17 north, Range 15 west, and Sections 23, 24, 25, 26, 27, 34, 35, 36, Township 18 north Range 15 west, and Sections 28, 29, 30, 31, 32, 33, 34 of Township 18 north, Range 14 west and Sections 4, 5, 6 and 7 of Township 17 north, Range 14 west, for the purpose of enabling said city to provide a water supply of good, pure and wholesome water for the citizens of the City of Shreveport, Louisiana, as now constituted or hereafter extended reserving to the State of Louisiana all minerals and mineral rights on and under said lands.

Section 2. Be it further enacted, etc., That immediately after the termination of the suit of the Cross Lake Shooting and Fishing Club, Plaintiff in Error, vs. The State of Louisiana, No. 443 of the October Term 1909 of the Supreme Court of the United States, in the event said suit shall terminate favorably to the State and its title to said lands herein above described involved in said suit be maintained, it shall be the duty of the Register of the Land Office to cause accurate surveys to be made of the bed of said lake, at the expense of the said City of Shreveport, and embrace within the traverse lines thereof to determine the acreage of said land, and on the payment to him, by the City of Shreveport or its legal representatives of the sum of One Dollar per acre for each acre of land so embraced within the traverse lines of said lake in the sections, townships and ranges mentioned, he shall convey to the said City of Shreveport the said lands above described, embracing what is now the unsurveyed lands in the bed of said Cross Lake, and thenceforth the said lands shall become vested in the said City of Shreveport for the purposes and subject to the conditions of this Act, and the net funds arising from said sale after payment of the fees of the Register of the Land Office and the cost, expenses and attorney's fees incurred by the State in the aforesaid suit to maintain the title of the State to said lands shall be placed to the credit of the Board of Commissioners of the Caddo Levee District.

Section 3. Be it further enacted, etc., That the said lands so conveyed to the City of Shreveport shall be used by it as a reservoir or storing basin for water to be used by said city for the purpose of supplying itself and its citizens with a good and wholesome supply of water, and should the said City of Shreveport fail to utilize the said bed of said lake for said purpose within ten years from the date of the passage of this Act or afterward should ever cease to utilize it for said purpose, then the said land shall revert back and become the property of the State of Louisiana, subject to the repayment to the City of Shreveport of the purchase price but without any interest.

Duty of Register of Land Office to make necessary surveys, etc.

To revert to State if not used for waterworks purposes.

City of Shreve-  
port to have juris-  
diction of same.

Section 4. Be it further enacted, etc., That the City of Shreveport in the protection and conservation of its water supply is hereby granted full and plenary power over the said lake and may make such rules and regulations for the government thereof as its City Council may from time to time determine, and may enforce such rules and regulations by fine or imprisonment as is now provided for the enforcement of its ordinances under its charter and amendments thereto.

Section 5. Be it further enacted, etc., That all laws or parts of laws, contrary to or in conflict with this Act, be and the same are, hereby repealed.

P. M. LAMBREMONT,  
Lieutenant Governor and President of the Senate.

H. G. DUPRE,  
Speaker of the House of Representatives  
Approved: June 29, 1910.

J. Y. SANDERS,  
Governor of the State of Louisiana.

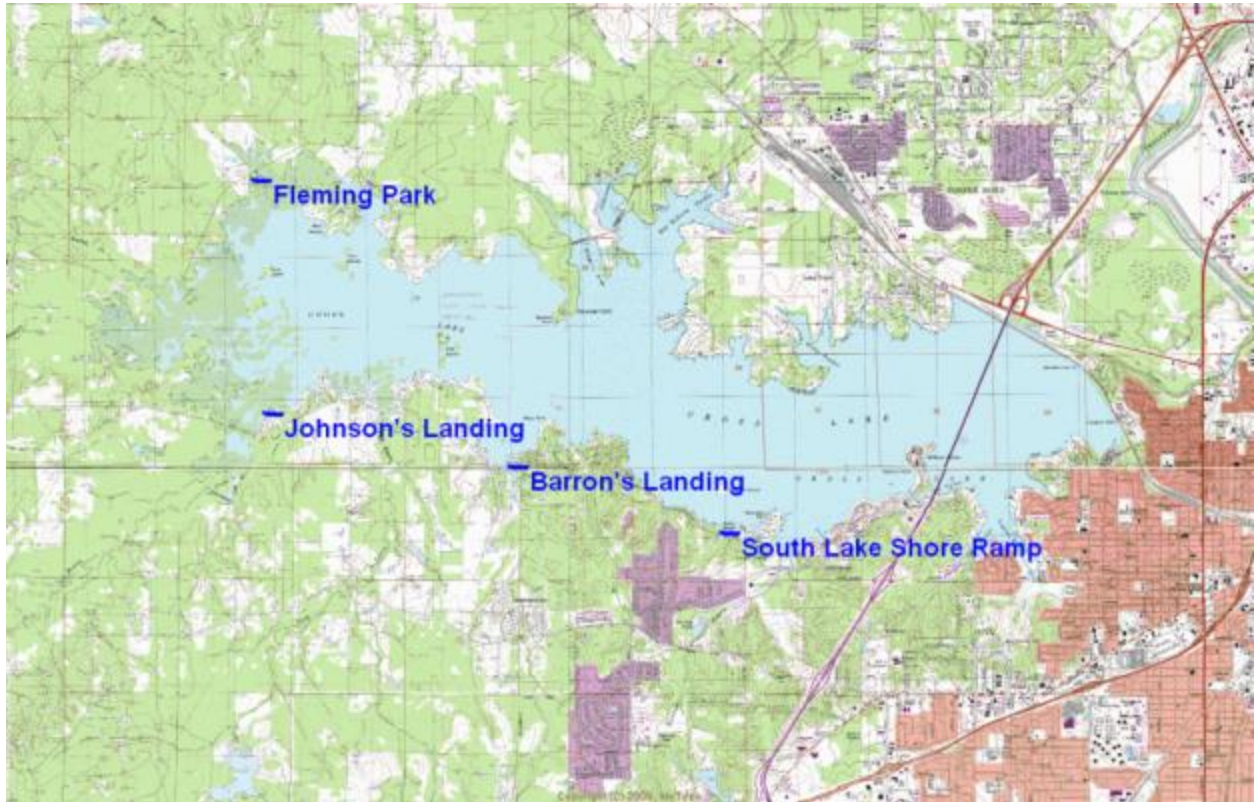
A true copy:  
JOHN T. MICHEL,  
Secretary of State.

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## APPENDIX II

[\(return to Boat Ramps\)](#)

### Cross Lake Public Boat Ramps

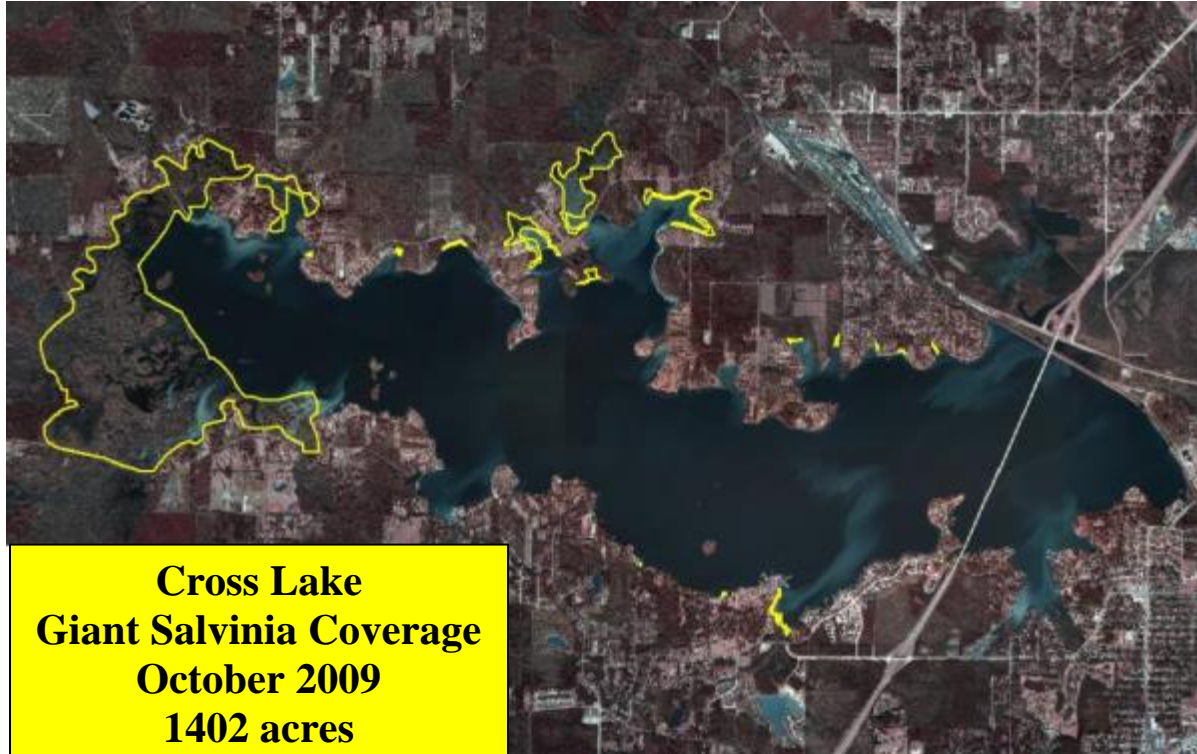


## APPENDIX III

[\(return to Type Maps\)](#)

### Cross Lake Type Maps

2009 Cross Lake Type Map



## 2013 Cross Lake Type Map

